IN THE SPECIFICATION

At page 1, the 1st paragraph entitled "RELATED APPLICATIONS" is amended to read as follows:

This application is related to co-pending application 09/905,528, filed August 22, 2001, which is a continuation of Serial No. 09/333,172, filed June 14, 1999, now issued as Patent No. 6,353,688, which is a continuation-in-part of application Serial No. 08/073,929, filed June 8, 1993, now issued as Patent No. 5,912,993. The subject matter of these applications is incorporated herein by reference.

At page 2, the last paragraph beginning at line 30 is amended to read as follows:

While minimum complexity has a clear theoretical advantage, it can be computationally intensive, making it difficult to reach a conclusion in a period of time that would permit practical application, unless the parameterization of the system in known in advance. A representation of a system requires a model language that decomposes it into smaller units, and one must choose between a vast number of languages, i.e., means for expressing the algorithm. Even after a language is chosen, the set of all possible parameterizations with that language can become too large to search practically. For example, consider modeling the covariance matrix of a system of N variables with P parameters, such as discussed above relative to the Negishi patent. Standard estimates assume that all the elements of the covariance matrix are significant, i.e., each variable is correlated with every other variable. This gives N(N+1)/2 independent elements of the covariance matrix (after accounting for the symmetry of the covariance matrix). A minimum complexity model seeks to represent these N(N+1)/2 numbers by a much smaller number P of parameters. One simple approach would be to set to zero all but P of the N(N+1)/2 elements. However, the choice of P elements among N(N+1)/2 is a combinatorially large problem and an exhaustive evaluation of all of the possibilities is not practical. In addition, the covariance matrix must be positive definite, and this constraint further restricts the possible parameterizations. It is clear therefore, that a practical method is needed which will find a minimum-complexity model without requiring an exhaustive search of all possible parameterizations.

At page 5, the 5th paragraph beginning at line 16 is amended to read as follows:

The Algebron™ system and method utilize a software program stored in a personal computer (PC) to determine the minimum number of factors required to account for the input data by seeking an approximate minimum complexity model that is achievable in a limited period of time using a reasonable number of computational steps. In an exemplary embodiment for estimating covariance in the daily returns of financial securities, the method generates a positive-definite estimate of the elements of a covariance matrix consistent with the input data. However, the method minimizes complexity of the covariance matrix by assuming that the number of independent parameters is likely to be much smaller that the number of elements in the covariance matrix. The Algebron™ method minimizes the number of independent parameters by describing each variable as a linear combination of independent factors and a part that fluctuates independently. The simplest model for the covariance matrix is selected so that it fits the data to within a specified quality as determined by the selected goodness-of-fit (GOF) criterion. In this case, the GOF criterion is the logarithm of the likelihood function.

4 B

At page 8, the last paragraph beginning at line 21 is amended to read as follows:

The data set chosen for this example presents tremendous problems for standard analysis techniques. For example, in the time series of the returns, two-thirds of all of the possible data are missing because of gaps in the trading or the reporting of the returns. Hence, direct calculation of the covariance matrix is impossible. Some form for sophisticated algebraic modeling is essential in order to estimate the covariance. In this example, the Algebron™ model of the covariance matrix required 8 factors and a total of 152 off-diagonal, nonzero loading matrix coefficients. This compares to standard factor analysis methods that would use 924 off-diagonal, nonzero loading matrix elements for this number of factors. As with Example 1, the presence of the large number of unnecessary model parameters grossly affects the determination of the remaining required parameters. Hence, the ten-fold reduction in model complexity afforded by the Algebron™ method leads to a tremendous improvement in accuracy.

5 B